In the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Cancelled)

2. (Currently Amended) ~~A circuit arrangement as claimed in claim 1,~~ A circuit arrangement for supplying an LED array comprising:

input terminals for connection to a voltage supply source;

output terminals for connection to the LED array;

a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

an inductive element L;

a unidirectional element;

a switching element coupled to the inductive element and the unidirectional element; and

a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC-converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

a circuit coupled to the input terminals and the output terminals for controlling a time lapse T_{on}, during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of V_{in} and V_{out}, wherein V_{in} is the voltage present between the input terminals and V_{out} is the voltage present between the output terminals;

wherein the DC-DC-converter is an up-converter and the circuit comprises a circuit for controlling T_{on} proportional to V_{out}/V_{in}^2.

3. (Currently Amended) ~~A circuit arrangement as claimed in claim 1,~~ A circuit arrangement for supplying an LED array comprising:

input terminals for connection to a voltage supply source;

output terminals for connection to the LED array;

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a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

an inductive element L;

a unidirectional element;

a switching element coupled to the inductive element and the unidirectional element; and

a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC-converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

a circuit coupled to the input terminals and the output terminals for controlling a time lapse T_{on}, during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of V_{in} and V_{out}, wherein V_{in} is the voltage present between the input terminals and V_{out} is the voltage present between the output terminals;

wherein the DC-DC-converter is a down-converter and the circuit comprises a circuit for controlling T_{on} proportional to $V_{out}/((V_{out}-V_{in})^2$.

4. (Currently Amended) ~~A circuit arrangement as claimed in claim 1,~~ A circuit arrangement for supplying an LED array comprising:

input terminals for connection to a voltage supply source;

output terminals for connection to the LED array;

a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

an inductive element L;

a unidirectional element;

a switching element coupled to the inductive element and the unidirectional element; and

a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC-

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converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

a circuit coupled to the input terminals and the output terminals for controlling a time lapse T_{on}, during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of V_{in} and V_{out}, wherein V_{in} is the voltage present between the input terminals and V_{out} is the voltage present between the output terminals;

wherein the DC-DC-converter is a flyback-converter comprising a transformer with a transformation ratio N and the circuit comprises a circuit for controlling T_{on} proportional to $(V_{in} + V_{out}/N)/V_{in}^2$.

5. (Currently Amended) ~~A circuit arrangement as claimed in claim 1,~~ A circuit arrangement for supplying an LED array comprising:

input terminals for connection to a voltage supply source;

output terminals for connection to the LED array;

a DC-DC-converter coupled between the input terminals and the output terminals, the DC-DC-converter comprising:

an inductive element L;

a unidirectional element;

a switching element coupled to the inductive element and the unidirectional element; and

a control circuit coupled to a control electrode of the switching element for generating a high frequency control signal for rendering the switching element conductive and non-conductive at a high frequency to thereby operate the DC-DC-converter in the critical discontinuous mode and equipped with circuitry for controlling the current through the output terminals at a predetermined value, the circuitry for controlling the current through the output terminals comprising:

a circuit coupled to the input terminals and the output terminals for controlling a time lapse T_{on}, during which the switching element is maintained in a conductive state during each high frequency period of the control signal, proportional to a mathematical expression that is a function of V_{in} and V_{out}, wherein V_{in} is the voltage present between the input terminals and V_{out} is the voltage present between the output terminals;

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wherein the circuit comprises a current source that generates a current that is proportional to V_{in}^2.

6. (Original) A circuit arrangement as claimed in claim 5, wherein the current source comprises a first voltage divider coupled to the input terminals, a first zener diode coupled to the first voltage divider and a switching element coupled to the first zener diode.

7. (Original) A circuit arrangement as claimed in claim 6, wherein the current source comprises a second zener diode.

8. (Original) A circuit arrangement as claimed in claim 5, wherein the circuit further comprises:

a capacitor coupled to the current source; and

a comparator, comprising:

a first comparator input terminal coupled to the capacitor,

a second comparator input terminal coupled to an output terminal of a second voltage divider coupled to the output terminals of the circuit arrangement, and

a comparator output terminal coupled to the control electrode of the switching element.

9. (Currently Amended) A circuit arrangement as claimed in claim ~~1~~ 5, wherein the control circuit is equipped with circuitry for substantially square wave modulating the amplitude of the current through the output terminals.

10. (Currently Amended) A Liquid Crystal Display unit equipped with a backlight formed by a LED array and with a circuit arrangement as claimed in claim ~~1~~ 5.

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